

| noraplan® nTx

nora®

20.11.2014

**nora®**

# | AGENDA

1	Concept
2	Advantages
3	Reduced installation time
4	Technical data / fire tests
5	References / Trial installations

# | Concept

Idea / Target:

- System solution for transportation
- Fast installation in rail vehicles / reduction of down time
- Fulfills same requirements

# | Concept

Result of development:

- Self-adhesive rubber floorcovering



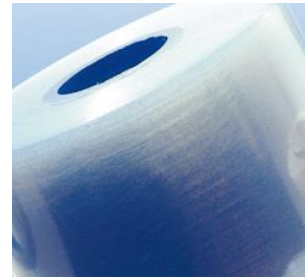
noraplan®

+



adhesive

+



protection foil

=



noraplan® ... nTx

- coordinated system of adhesive & floorcovering
  - Works on all common subfloors (plywood, aluminum, phenolic)
  - Adhesive protected by foil
  - Foil ease to remove and dispose

# | Advantages

- No application of adhesive → substantial time saving
- No curing time → substantial time saving
- No risk to apply incorrect amount of adhesive
- Can be walked on immediately → f.ex. No special protection of central roll needed
- Immediate joint welding possible

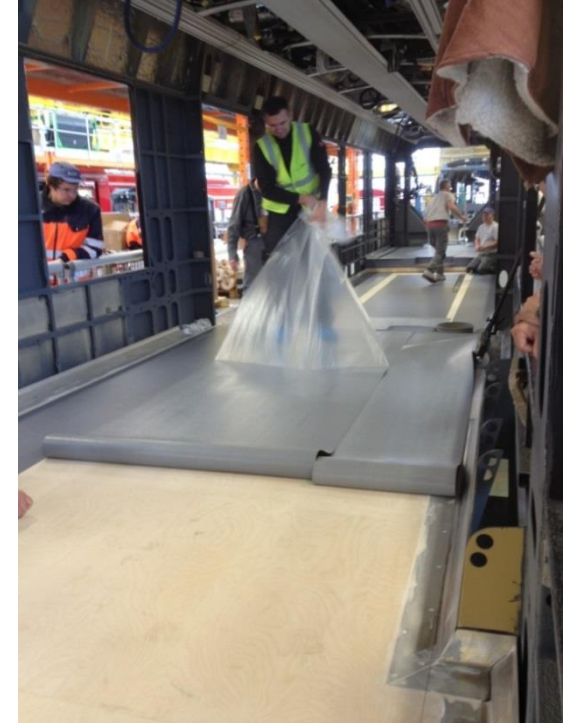
**>> COMPLETE INSTALLATION OF 1 CAR WITHIN 1 DAY**

# | Advantages

- Complete system → 1 contact only
- Logistical advantage (order handling + stock keeping + disposal etc.)
- Easy removal of floorcovering in case of renovation/repair
- Non-hazardous, environmental friendly
- Cut-to-size self-adhesive parts (Car Kits)

# | Comparison: noraplan® nTx vs. wet adhesive

comparison of installation in a train: approx. 13m x 2,50		
	noraplan® nTx (*)	Wet adhesive, f.e. UZIN KR430 (**)
Mixing of adhesive	0	5
Application of adhesive	0	15
Curing time	0	10
Measuring + layout	15	15
Installation floorcovering	120	240
Drying time adhesive	0	1.440
Joint sealing	60	60
Drying time joint sealing	720	720
<b>Total working time (h)</b>	<b>15,3</b>	<b>41,8</b>
<b>Time saving (h)</b>	<b>26,5</b>	



# Technical Data fire – smoke – toxicity / noraplan mobil 931nTx

- All technical data unchanged (dimensional stability, abrasion, slip resistance etc.)

Technical data Properties acc. to EN 1817	Test method	Requirements	Average test results from continuous production
Thickness	EN ISO 24 346	Mean value $\pm 0.15$ mm of nominal value	3.0 mm
Dimensional stability	EN ISO 23 999	$\pm 0.4$ %	$\pm 0.3$ %
Cigarette-burn resistance	EN 1399	Procedure A (stubbed out) $\geq$ level 4 Procedure B (burning) $\geq$ level 3	Fulfilled
Flexibility	EN ISO 24 344, procedure A	Mandrel diameter 20 mm, no fissuring	Fulfilled
Hardness	ISO 7619	$\geq 75$ Shore A	85 Shore A
Residual indentation	EN ISO 24 343	Mean value $\leq 0.15$ at thickness $< 2.5$ Mean value $\leq 0.20$ at thickness $\geq 2.5$	0.06 mm
Abrasion resistance at 5 N load	ISO 4649, procedure A	$\leq 250$ mm <sup>3</sup>	130 mm <sup>3</sup>
Colour fastness to artificial light	ISO 105-B02, procedure 3, test conditions 6.1 a)	At least 6 on the blue scale, $\geq 3$ on the grey scale (= 350 MJ / m <sup>2</sup> )	Grey scale $\geq 3$ acc. to ISO 105-A02
<b>Additional technical data</b>			
Weight	EN ISO 23 997		$\sim 5$ kg/m <sup>2</sup>
Tear strength	ISO 34-1, method B, procedure A		31 N/mm
Slip resistance	DIN 51 130		R 9* (smooth surface) R 10* (finely-structured surface)
Improvement in footfall sound absorption	ISO 10 140-3		6 dB
Effect of chemicals	EN ISO 26 987	Depending on concentration and time of exposure	Resistant <sup>(A)</sup>
Electrostatic behaviour when being walked on	EN 1815		Antistatic, charging in case of rubber soles $< 2$ kV
<b>Fire behaviour/smoke behaviour</b>		<b>Fulfills the requirements</b>	
Fire behaviour	EN 45 545	Hazard Level	HL2*
<b>Adhesive characteristics</b>			
Description			Pressure-sensitive hot melt adhesive
Density			approx. 0.92 g/cm <sup>3</sup>
Softening range	Kofler bench		approx. 105 °C
Viscosity			45.000 mPas at 170 °C till 13.000 mPas at 190 °C
Solid body content			87%
VOC			0%

\* Tested and certificated by an independent testing institute.

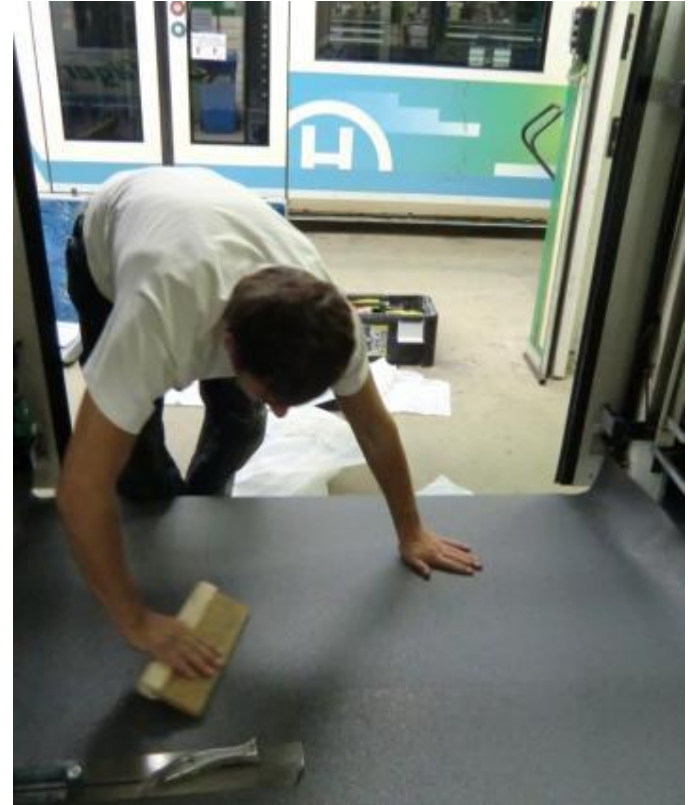


## | References / trial installations

RNV-tramway (Heidelberg) / August 2010



## | References / trial installations



## | References / trial installations





## | References / trial installations



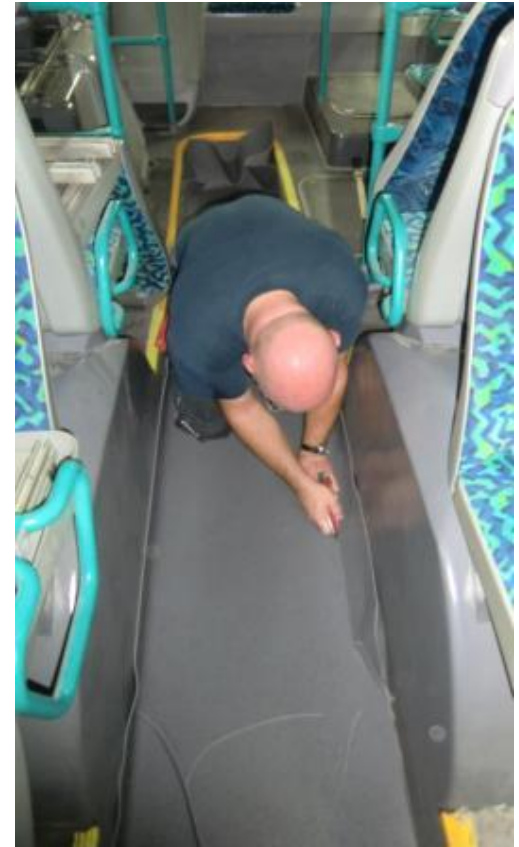
## | References / trial installations

### 2 RNV-Buses in October 2010



# | References / trial installations

## 2 RNV-buses



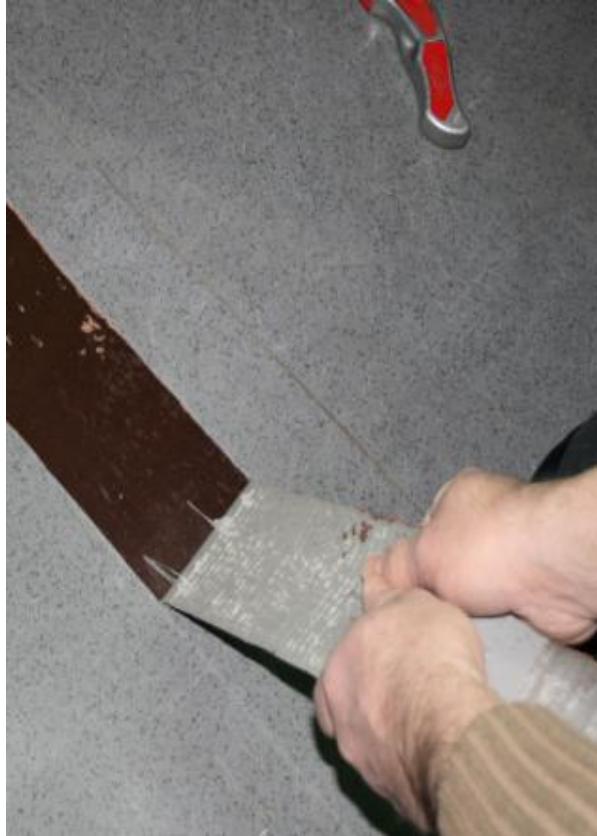


## | References / trial installations

### Removal of floorcovering in February 2012



## | References / trial installations





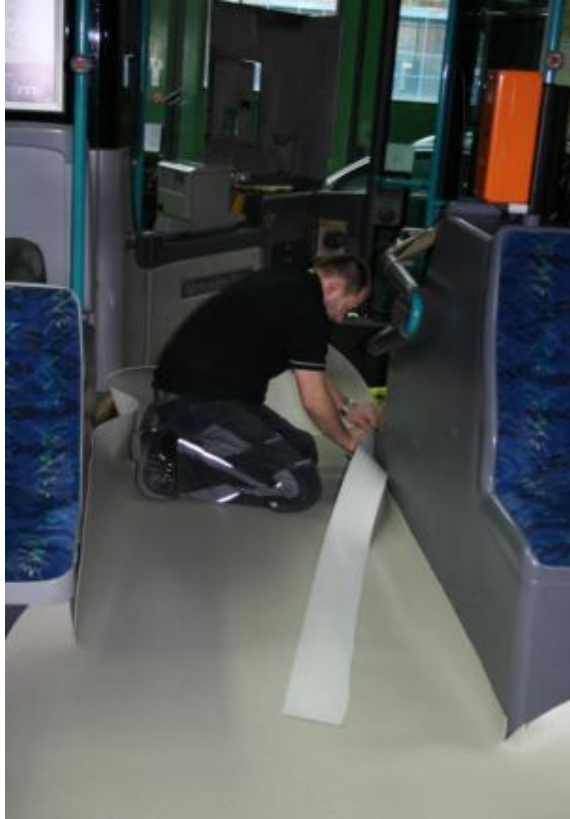
## | References / trial installations



## | References / trial installations

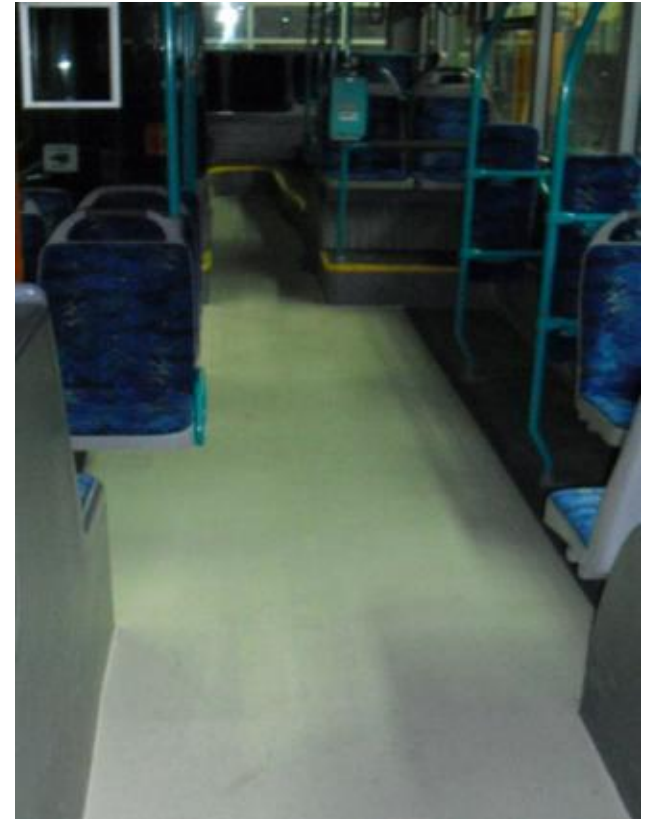


## | References / trial installations



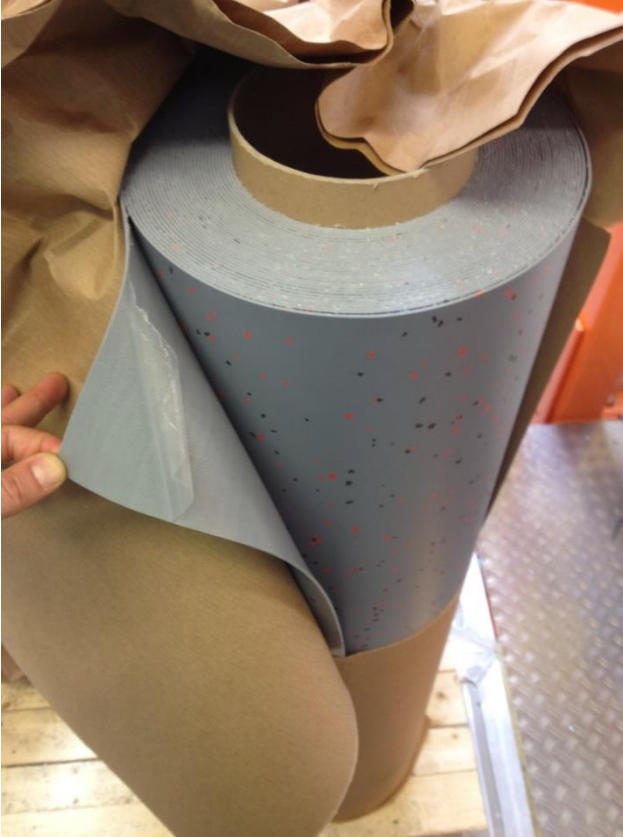


## | References / trial installations

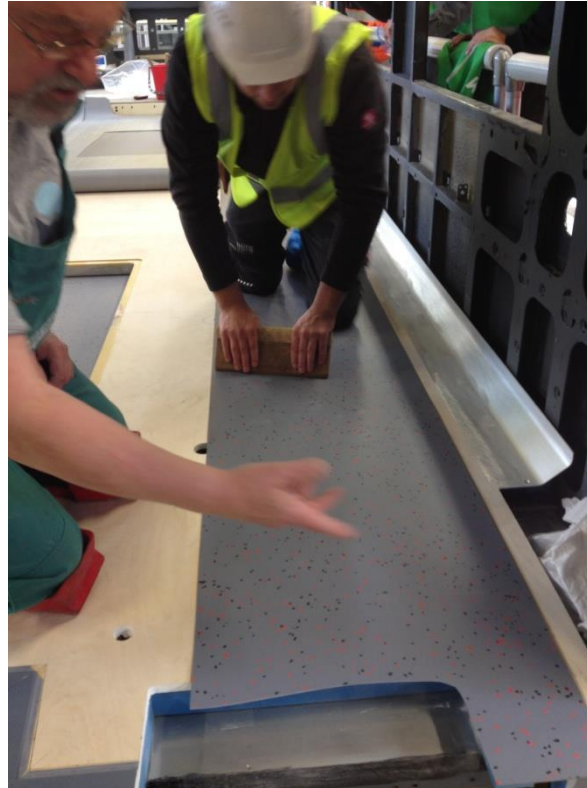


## | References / trial installations

ALSTOM LINT Abellio, March 2013



## | References / trial installations





## | References / trial installations

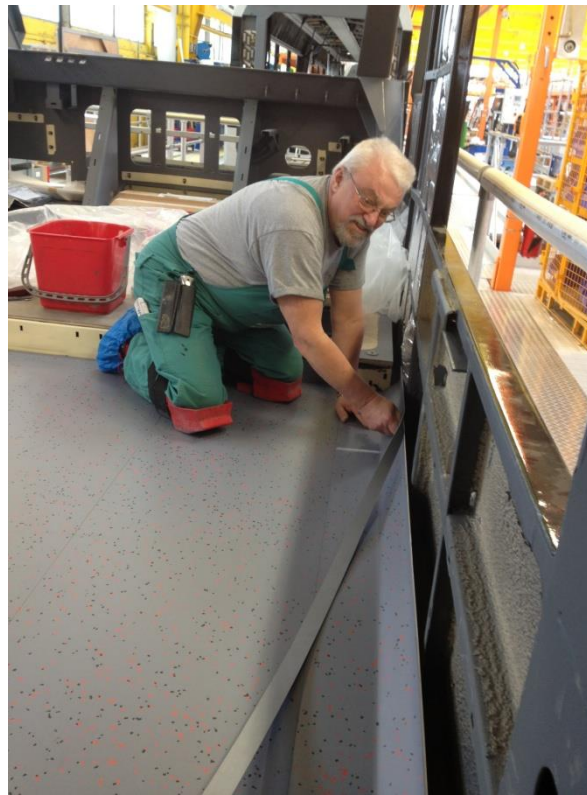


## | References / trial installations



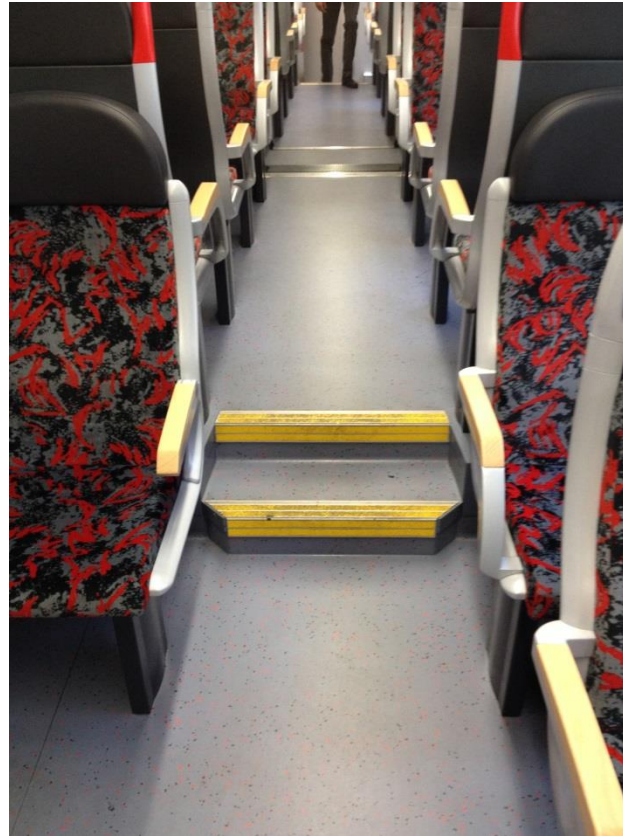


## | References / trial installations

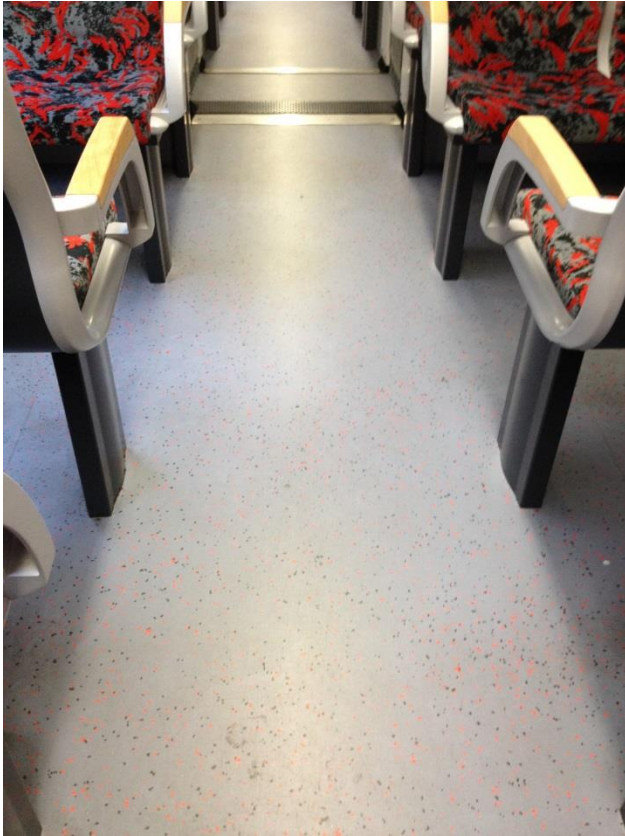


## | References / trial installations

### Quality check LINT Abellio, July 2014



## | References / trial installations





**nora<sup>®</sup>**

**nora**